

CLAIMS

1. A control system for the operation of a kitchen oven of the type which comprises: a cooking chamber (11) lodging a heat source (20) and a temperature sensor (30); and a thermostatic control device (40) external to the cooking chamber (11) and which is operatively associated with an energy source (1), with the heat source (20), with the temperature sensor (30) and with a scale (45) of the oven operating temperatures, in order to control the energy supplied to the heat source (20) as a function of the operating temperature to which it has been selectively adjusted and of the temperature sensed by the temperature sensor (30), characterized in that it further comprises a decoder (50) which is operatively associated with the thermostatic control device (40), in order to produce a digital signal for each temperature of the scale (45) which has been set in the thermostatic control device (40); and an electronic control module (M) energized by an electric energy source (2), and comprising a processing unit (60), an initial heating timer (Tin), a digital display (70), and an audible alarm (80) operatively associated with each other, said processing unit (60) being connected to the decoder (50) so as to receive therefrom and to process a digital signal indicative of the activation of the oven and of the operating temperature selected in the thermostatic control device (40), in order to activate the audible alarm (80) when a pre-established initial heating time has elapsed, so that the cooking chamber (11) reaches the selected operating temperature.
2. The system as set forth in claim 1, characterized in that the digital display (70) indicates the selected operating temperature, when the initial

heating time determined by the processing unit (60) has elapsed.

3. The system as set forth in claim 1, characterized in that the thermostatic control device (40) comprises
5 a driving rod (43) to which is affixed a knob (44) to be operated by the user in association with the scale (45) of the oven operating temperatures, the decoder (50) being operatively associated with the driving rod (43) to sense the displacement of the knob (44) along
10 the scale (45) and to produce a digital signal indicative of said displacement.

4. The system as set forth in claim 3, characterized in that the driving rod (43) and the knob (44) are rotatably displaced along the scale (45) of the oven
15 operating temperatures.

5. The system as set forth in claim 4, characterized in that the decoder is of the type which uses the Gray Codification to produce the digital signals corresponding to the different adjustments for the
20 operating temperature of the cooking chamber (11) which are obtained in the respective rotation positions of the knob (44)-driving rod (43) assembly.

6. The system as set forth in claim 1, characterized in that the temperature sensor (30) is a sensor bulb
25 directly coupled to the thermostatic control device (40), so as to operate the latter as a function of the temperature condition sensed inside the cooking chamber (11).

7. The system as set forth in claim 1, characterized in that the electronic control module (M) still
30 comprises a timer (T) operatively associated with the processing unit (60), with the digital display (70) and with the audible alarm (80), so as to indicate in the digital display (70) the time elapsed to be
35 controlled by the user, and to make the audible alarm

(80) ring when the time preset in the timer (T) has elapsed.

8. The system as set forth in claim 1, characterized in that the electronic control module (M) further comprises an operation timer (Top) which is operatively associated with the processing unit (60), with the digital display (70), with the audible alarm (80) and with the thermostatic control device (40) in order to indicate, in the digital display (70), the count of an operational time of the heat source (20) set by the user, making the audible alarm (80) ring and interrupting the energization of the heat source (20) upon completion of the time selectively adjusted in the operation timer (Top).

9. The system as set forth in claim 8, characterized in that the heat source (20) is defined by a gas burner, the thermostatic control device (40) being defined by a thermostatic valve incorporating an electromagnetic obturator (41), the system further comprising a thermocouple (42) associated with the heat source (20) and which is electrically connected to the electromagnetic obturator (41) by a normally closed electronic switch (R) provided in the electronic control module (M) and which is connected to the processing unit (60) to be opened, interrupting the energization of the electromagnetic obturator (41) and blocking the supply of gas to the heat source (20), upon completion of the time selectively adjusted by the user in the operation timer (Top).

10. The system as set forth in claim 9, characterized in that the electronic switch (R) is a relay which is normally closed.

11. The system as set forth in claim 8, characterized in that the initial heating time for the cooking chamber (11) is defined by the processing unit (60) as

(80) ring when the time preset in the timer (T) has elapsed.

8. The system as set forth in claim 1, characterized in that the electronic control module (M) further comprises an operation timer (Top) which is operatively associated with the processing unit (60), with the digital display (70), with the audible alarm (80) and with the thermostatic control device (40) in order to indicate, in the digital display (70), the count of an operational time of the heat source (20) set by the user, making the audible alarm (80) ring and interrupting the energization of the heat source (20) upon completion of the time selectively adjusted in the operation timer (Top).

9. The system as set forth in claim 8, characterized in that the heat source (20) is defined by a gas burner, the thermostatic control device (40) being defined by a thermostatic valve incorporating an electromagnetic obturator (41), the system further comprising a thermocouple (42) associated with the heat source (20) and which is electrically connected to the electromagnetic obturator (41) by a normally closed electronic switch (R) provided in the electronic control module (M) and which is connected to the processing unit (60) to be opened, interrupting the energization of the electromagnetic obturator (41) and blocking the supply of gas to the heat source (20), upon completion of the time selectively adjusted by the user in the operation timer (Top).

10. The system as set forth in claim 9, characterized in that the electronic switch (R) is a relay which is normally closed.

11. The system as set forth in claim 8, characterized in that the initial heating time for the cooking chamber (11) is defined by the processing unit (60) as

a function of the time elapsed since the last switching-off of the oven (10) in the thermostatic control device (40) and measured by the operation timer (Top).

5 12. The system as set forth in claim 1, characterized
in that the electronic control module (M) further
comprises at least one additional operation timer
(Tad) which is operatively associated with the
processing unit (60), with the digital display (70),
10 with the audible alarm (80) and with the control
device (90) connecting the energy source (1) to an
additional heat source (20a) defined in a cook top
associated with the oven (10), said additional
operation timer (Tad) indicating, in the digital
15 display (70), the count of the operating time of the
additional heat source (20a) preset by the user,
making the audible alarm (80) ring, and interrupting
the energization of the additional heat source (20a)
upon completion of the time selectively adjusted in
20 the additional operation timer (Tad).

13. The system as set forth in claim 11, characterized
in that the additional heat source (20a) is a gas
burner and the control device (90) is a valve
incorporating an electromagnetic obturator (41), said
25 system further comprising a thermocouple (42)
associated with the additional heat source (20a) and
which is electrically connected to the electromagnetic
obturator (41) by a normally closed additional
electronic switch (Rad) provided in the electronic
30 control module (M) and which is connected to the
processing unit (60) to be opened, interrupting the
energization of the electromagnetic obturator (41) and
blocking the supply of gas to the additional heat
source (20a), upon completion of the time selectively
35 preset by the user in the additional operation

timer(Tad) .

14. The system as set forth in claim 12, characterized in that the additional electronic switch (Rad) is a normally closed relay.